

No.

200100094



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

State of Oregon by/through S T B F acting
on behalf of Oregon State University

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLACEMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

POTATO

'Klamath Russet'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-seventh day of September, in the year two thousand and seven.

Attest:



Blm Zee

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

[Signature]
Secretary of Agriculture

REPRODUCE LOCALLY. Include form number and date on all reproductions

Form Approved - OMB No. 0581-0065

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICEAPPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

State of Oregon by/through STBHE acting
on behalf of Oregon State University

Location on behalf of Oregon

2. TEMPORARY DESIGNATION OR
EXPERIMENTAL NAME

A085165-1

3. VARIETY NAME

Klamath Russet

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

Office of Technology Transfer
Oregon State University
312 Kerr Administration Building
Corvallis, OR 97331

5. TELEPHONE (Include area code)

541.737-0874

6. FAX (Include area code)

541.737-3093

FILING DATE

02/02/01

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF
ORGANIZATION (corporation, partnership, association, etc.)

Educational Institution

8. IF INCORPORATED, GIVE
STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)

Office of Technology Transfer
c/o Sarah Mabee
Oregon State University
A312 Kerr Administration Bldg
Corvallis, OR 97331-2140 USAFILING AND EXAMINATION
FEES:

\$ 2705.00

DATE 02/02/01

CERTIFICATION FEE:

\$ 08/13/2007

DATE \$768

11. TELEPHONE (Include area code)

541-737-8100

12. FAX (Include area code)

541-737-3093

13. E-MAIL

Sarah.Mabee@oregonstat.edu

14. CROP KIND (Common Name)

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on
reverse)

- a. ☒ Exhibit A. Origin and Breeding History of the Variety
- b. ☒ Exhibit B. Statement of Distinctness
- c. ☒ Exhibit C. Objective Description of Variety
- d. ☒ Exhibit D. Additional Description of the Variety (Optional)
- e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
- f. ☒ Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)
- g. ☒ Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF
CERTIFIED SEED? See Section 83(e) of the Plant Variety Protection Act☒ YES (If "yes", answer items 20
and 21 below)☒ NO (If "no", go to item 22)20. DOES THE OWNER SPECIFY THAT SEED OF THIS
VARIETY BE LIMITED AS TO NUMBER OF CLASSES?☐ YES☒ NOIF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED21. DOES THE OWNER SPECIFY THAT THE CLASSES BE
LIMITED AS TO NUMBER OF GENERATIONS?☐ YES☒ NOIF YES, SPECIFY THE
NUMBER 1, 2, 3, etc. ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED
FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR
OTHER COUNTRIES?

YES

NO

IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE
FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL
PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)?☐ YES☒ NOIF YES, GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED
REFERENCE NUMBER. (Please use space indicated on reverse.)24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or
for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believes(s) that the variety is new, distinct, uniform, and stable as required in Section 42,
and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER

SIGNATURE OF OWNER

NAME (Please print or type)

William Hostetler

NAME (Please print or type)

CAPACITY OR TITLE

Director of Technology Transfer

DATE

1/31/01

CAPACITY OR TITLE

DATE

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety or by direct deposit soon after filing, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to reproduce the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVP@mail@usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

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SPECIFIC INSTRUCTIONS:

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, Seed Regulatory and Testing Branch, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870.
<http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Exhibit A: Origin and Breeding History of the Variety

Klamath Russet was initially selected by Oregon State University Agriculture Experiment Station scientists at the Central Oregon Experiment Station, Powell Butte, Oregon, in 1987 from a cross between Russet Norkotah and A79172-6 performed by Dr. J.J. Pavék, of the USDA-ARS, Aberdeen, Idaho.

It was then tested extensively as AO85165-1 (A=Aberdeen, ID, cross, and O=Oregon selection) in Oregon Statewide Trials at four locations from 1990 to 1998, in Tri-State (OR, WA, ID) Trials at three locations in 1993, and in Western Regional Trials at 13 locations in seven states from 1994 to 1996. The Oregon State University Potato Variety Development Program, led by Dr. Alvin R. Mosley, and Oregon State University sponsored AO85165-1 in all trials and supplied all seed. Klamath Russet was released in 2000 by Oregon State University, in cooperation with California, Idaho, Washington, Texas, Colorado, and the USDA-ARS.

The stable and uniform characteristics of the subject variety, discussed elsewhere herein, were observed annually over the time interval from at least 1990 to 1998. These observations occurred in Oregon, Tri-State, and/or Western Regional Trials.

Breeding History:

Klamath Russet was selected from a cross between A79172-6 (female parent) and Russet Norkotah (male parent); the attached pedigree chart shows the parental lineage for three previous generations.

Variants:

At this point, no predictable variants have been specifically identified, though it is expected that variants will occur in the future. Most potato varieties eventually produce mutant plants known as “giant hills,” “bolters,” or “bull plants.” It is expected that these plants will be found in Klamath Russet at a very low frequency.

Selection Criteria:

Fresh market selection criteria for Klamath Russet included marketable yield, carbohydrate composition (e.g., higher sugar, lower starch), acceptable taste when baked, good appearance, freedom from serious external and internal defects, disease resistance, tuber shape (long, russet-like) and overall performance relative to leading russet-skinned potato varieties (e.g., Russet Norkotah and Russet Burbank).

Breeding Method:

A traditional breeding process was used. Male and female parents were crossed, followed by planting the seed produced, generating minitubers, and subsequent selection based on established criteria. Approximately 150 crosses were made, and three fruit from each cross (approximately 200 seeds/fruit) were planted. Seedlings were grown in a greenhouse, and greenhouse-produced tubers were field-planted. Klamath Russet was line selected from these plantings.

Difference from Original Material:

Klamath Russet is superior to its parents and siblings in tuber appearance, yield, sugar vs. carbohydrate levels, taste, and related fresh market characteristics.

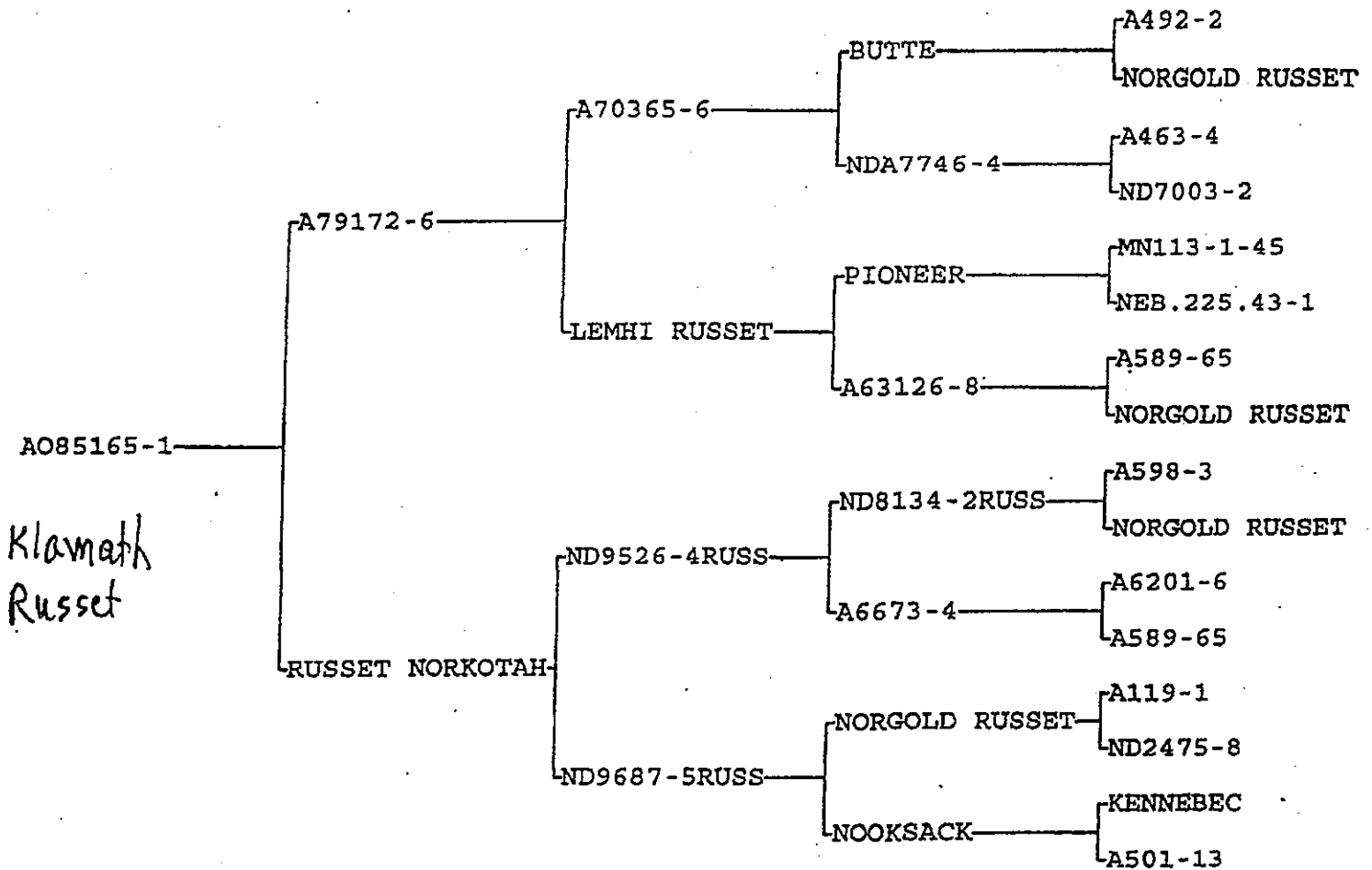
Exhibit A: Origin and Breeding History of the Variety (continued)

Variety Name:

As a permanent potato variety name, Klamath Russet is unique to this variety as shown in The Potato Association of America "North American Potato Variety Inventory" (<http://www.umaine.edu/PAA/PVI.htm>).

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AO85165-1



CLONE: AO85165-1
BREEDER: YEAR:
INSTITUTIONS:
CITATION:

TUBER TYPE: OBLONG
SKIN TYPE: MED RUSS
FLOWER COLOR: RED-PURPLE
MATURITY CLASS: MEDIUM
YIELD CATEGORY: MEDIUM
USAGE CLASS: FRESH
OTHER INFORMATION:
SYNONYMS:

Exhibit B: Statement of Distinctiveness

Klamath Russet is most similar to the potato varieties Russet Norkotah and Russet Burbank.

Russet Norkotah and Russet Burbank are commonly used as reference varieties in northwest potato variety development programs, against which potential new russet-skinned table-stock varieties are compared. Of these two reference varieties, Klamath Russet is most similar to its male parent Russet Norkotah; however, Klamath Russet has a number of distinctive characters listed below that differentiate it from each reference variety.

- 1) Klamath Russet vines have an erect growth habit, whereas both Russet Norkotah and Russet Burbank have a semi-erect to spreading growth habit.
(See Document B-1.)
- 2) Klamath Russet has a Purple (76A RHS)-colored corolla, whereas Russet Norkotah has a White (155C RHS) corolla, and Russet Burbank also has a White (155A RHS) corolla.
(See Document B-2.)
- 3) Klamath Russet has absent to weak calyx anthocyanin coloration, whereas both Russet Norkotah and Russet Burbank calyx anthocyanin coloration is absent.
(See Document B-2.)
- 4) Klamath Russet anther shape is a broad cone, similar to Russet Norkotah, whereas Russet Burbank anther shape is a pear-shaped cone.
(See Document B-2.)
- 5) Klamath Russet has a light sprout base with a strong intensity of anthocyanin coloration, whereas anthocyanin intensity in the light sprout base of Russet Norkotah is absent and is medium in that of Russet Burbank.
(See Document B-5.)
- 6) Klamath Russet is more resistant to Verticillium Wilt than either Russet Norkotah or Russet Burbank.
(See Document B-6.)

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Klamath Russet Plant

- Vines have an erect growth habit.



Russet Norkotah Plants

- Vines have a semi-erect to spreading growth habit.



Russet Burbank Plant

- Vines have a semi-erect to spreading growth habit.



Klamath Russet Flower

- The corolla is colored Purple (76A RHS).
- Calyx anthocyanin coloration is absent to weak.
- Anther shape is a broad cone.



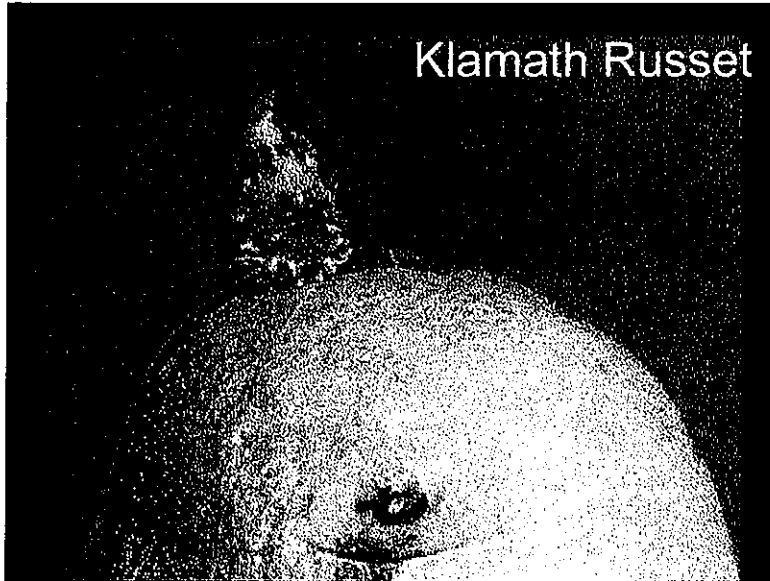
Russet Norkotah Flower

- The corolla is colored White (155C RHS).
- Calyx anthocyanin coloration is absent.
- Anther shape is a broad cone.



Russet Burbank Flower

- The corolla is colored White (155A RHS).
- Calyx anthocyanin coloration is absent.
- Anther shape is a pear-shaped cone.



Klamath Russet

Klamath Russet Light Sprout

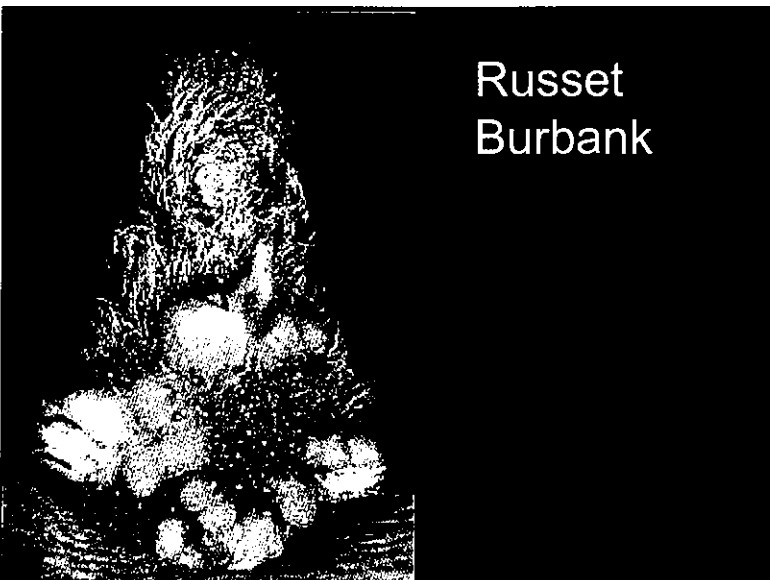
- Light sprout base anthocyanin coloration intensity is strong.



Russet Norkotah

Russet Norkotah Light Sprout

- Light sprout base anthocyanin coloration intensity is absent.



**Russet
Burbank**

Russet Burbank Light Sprout

- Light sprout base anthocyanin coloration intensity is medium.

Distinctive Character:

- Klamath Russet is more resistant to Verticillium Wilt than either Russet Norkotah or Russet Burbank.

Verticillium Wilt Trials

Four trials presented: three in Aberdeen, ID, and one in Hermiston, OR.

Trial 1

Location: Aberdeen, ID

Year: 1994

Cooperator: USDA-ARS

Plot Size: 20 plants/variety/replication

Planting Date: mid-May

Evaluation Date: mid August

Disease Ratings (0 to 9; 0 = none; 9 = >90%)

	Rep.1	Rep. 2	Rep. 3	Var. Mean
Russet Norkotah	9	9	9	9.00 a
Russet Burbank	6	9	9	8.00 a
Klamath Russet	3	6	6	5.00 b

t Test for Verticillium

Error df: 4
 Error MS: 1
 Critical Value of t: 2.78
 LSD (0.05) for Verticillium: 2.27

Trial 2

Location: Aberdeen, ID

Year: 1995

Cooperator: USDA-ARS

Plot Size: 20 plants/variety/replication

Planting Date: mid-May

Evaluation Date: mid August

Disease Ratings (0 to 9; 0 = none; 9 = >90%)

	Rep.1	Rep. 2	Rep. 3	Var. Mean
Russet Norkotah	9	9	9	9.00 a
Russet Burbank	8	7	5	6.67 b
Klamath Russet	2	2	2	2.00 c

t Test for Verticillium

Error df: 4
 Error MS: 0.78
 Critical Value of t: 2.78
 LSD (0.05) for Verticillium: 2.00

Trial 3

Location: Aberdeen, ID

Year: 1996

Cooperator: USDA-ARS

Plot Size: 20 plants/variety/replication

Planting Date: mid-May

Evaluation Date: mid August

Disease Ratings (0 to 9; 0 = none; 9 = >90%)

	Rep.1	Rep. 2	Rep. 3	Var. Mean
Russet Norkotah	8	8	5	7.00 a
Russet Burbank	6	7	7	6.67 a
Klamath Russet	5	4	3	4.00 b

t Test for Verticillium

Error df: 4
 Error MS: 1.28
 Critical Value of t: 2.78
 LSD (0.05) for Verticillium: 2.56

Analysis of Combined Variety Means, Aberdeen, ID, Trials 1-3 (1994-1996)**Disease Ratings (0 to 9; 0 = none; 9 = >90%)**

	Rep.1	Rep. 2	Rep. 3	Var. Mean
Russet Norkotah	8.67	8.67	7.67	8.33 a
Russet Burbank	6.67	7.67	7.00	7.11 a
Klamath Russet	3.33	4.00	3.67	3.67 b

t Test for Verticillium

Error df: 12
 Error MS: 1.76
 Critical Value of t: 2.18
 LSD (0.05) for Verticillium: 1.36

GLM Procedure (Classes: Clone, Rep, Year. Dependent Variable: Verticillium)

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	135.1851852	9.6560847	5.49	0.0027
Error	12	21.1111111	1.7592593		
Corrected Total	26	156.2962963			

R-Square 0.864929 Coeff Var 20.82094 Root MSE 1.326371 Vert Mean 6.370370

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Clone	2	105.4074074	52.7037037	29.96	<.0001
Rep	2	2.2962963	1.1481481	0.65	0.5382
Year	2	12.5185185	6.2592593	3.56	0.0612
Clone*Rep	4	1.9259259	0.4814815	0.27	0.8893
Clone*Year	4	13.0370370	3.2592593	1.85	0.1837

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Clone	2	105.4074074	52.7037037	29.96	<.0001
Rep	2	2.2962963	1.1481481	0.65	0.5382
Year	2	12.5185185	6.2592593	3.56	0.0612
Clone*Rep	4	1.9259259	0.4814815	0.27	0.8893
Clone*Year	4	13.0370370	3.2592593	1.85	0.1837

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Trial 4

Location: Hermiston, OR

Year: 1994

Cooperator: Oregon State University AES

Plot Size: Two rows wide, with ten hills in each row = 20 plants/variety/replication

Planting Date: May 3, 1994

Evaluation Date: September 9, 1994

Disease Ratings (1 to 5; 5 = most resistant)

	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Variety Mean
Klamath Russet	3.00	4.00	5.00	3.00	3.75 a
Russet Burbank	3.00	2.50	3.00	2.50	2.75 b
Russet Norkotah	1.00	1.00	1.00	1.00	1.00 c

t Test for Verticillium

Error df: 6
 Error MS: 0.31
 Critical Value of t: 2.45
 LSD (0.05) for Verticillium: 0.96

NAME OF APPLICANT (S) State of Oregon by/through STBHE acting on behalf of Oregon State University	TEMPORARY OR EXPERIMENTAL DESIGNATION AO85165-1	VARIETY NAME Klamath Russet
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) Office of Technology Transfer Oregon State University 312 Kerr Administration Building Corvallis, OR 97331		PER OFFICIAL USE ONLY PVPO NUMBER #200100094

REFERENCE VARIETIES: Enter the reference variety name in the appropriate box.

Application Variety (V)	Reference Variety 1 (R1)	Reference Variety 2 (R2)	Reference Variety 3 (R3)	Reference Variety 4 (R4)
Klamath Russet	Russet Norkotah	Russet Burbank		

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

1. MARKET CHARACTERISTICS:

*MARKET CLASS:

1 = Yellow-flesh Tablestock 2 = Round-white Tablestock 3 = Chip-processing 4 = Frozen-processing
5 = Russet Tablestock 6 = Other _____

V	5	R1	5	R2	4,5	R3		R4	
---	---	----	---	----	-----	----	--	----	--

2. LIGHT SPROUT CHARACTERISTICS: (See Figure 1)

*LIGHT SPROUT: GENERAL SHAPE

1 = Spherical 2 = Ovoid 3 = Conica 4 = Broad cylindrica 5 = Narrow cylindrical 6 = Other _____

V	3	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

*LIGHT SPROUT BASE: PUBESCENCE OF TIP

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	3	R1	2	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

*LIGHT SPROUT BASE: ANTHOCYANIN COLORATION

1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	2	R1	1	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

*LIGHT SPROUT BASE: INTENSITY OF ANTHOCYANIN COLORATION (IF PRESENT)

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	4	R1	1	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

* LIGHT SPROUT TIP: HABIT

1 = Closed 2 = Intermediate 3 = Open

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

#200100094

2. LIGHT SPROUT CHARACTERISTICS: (continued)

LIGHT SPROUT TIP: PUBESCENCE

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	3	R1	2	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

LIGHT SPROUT TIP ANTHOCYANIN COLORATION

1 = Green 2 = Red-violet 3 = Blue-violet 4 = Other(describe) _____

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

LIGHT SPROUT TIP: INTENSITY OF ANTHOCANIN COLORATION (IF PRESENT)

1 = Absent 2 = Weak 3 = Medium 4 = Strong 5 = Very Strong

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

LIGHT SPROUT ROOT INITIALS: FREQUENCY

1 = Short
ABSENT 2 = Medium
SOME 3 = Long
ABUNDANT

V	1	R1	2	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

3. PLANT CHARACTERISTICS:

GROWTH HABIT: (See Figure 2)

3 = Erect (>45° with ground) 5 = Semi-erect (30-45° with ground) 7 = Spreading

V	3	R1	6	R2	6	R3		R4	
---	---	----	---	----	---	----	--	----	--

TYPE:

1 = Stem (foliage open, stems clearly visible) 2 = Intermediate 3 = Leaf (Foliage closed, stems hardly visible)

V	2	R1	1	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

MATURITY: Days after planting (DAP) at vine senescence

V	125	R1	100	R2	120	R3		R4	
---	-----	----	-----	----	-----	----	--	----	--

PLANTING DATE:

V	MAY 15	R1	MAY 15	R2	MAY 15	R3		R4	
---	--------	----	--------	----	--------	----	--	----	--

*REGIONAL AREA:

1 = Pacific North West (WA, OR, ID, CO, CA) 2 = North Central (ND, WI, MI, MN, OH) 3 = North East (ME, NY, PA, NJ, MD, MA, RI,)
 4 = Mid-Atlantic Erect (VI, NC, SC, South NJ, FL) 5 = South (LA, TX, AZ, NE) 6 = Canada
 7 = Europe 8 = England 9 = Latin America 10 = Brazil 11 = Other _____

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

MATURITY CLASS:

1 = Very Early (<100 DAP) 2 = Early (100-110 DAP) 3 = Mid-season (111-120 DAP) 4 = Late (121-130 DAP) 5 = Very Late (>130 DAP).

V	4	R1	2	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

4. STEM CHARACTERISTICS: Measure at early first bloom*** STEM ANTHOCYANIN COLORATION:**

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	1	R1	1	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

STEM WINGS: (See Figure 3)

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	3	R1	2	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

5. LEAF CHARACTERISTICS:**LEAF COLOR:** (Observe fully developed leaves located on middle 1/3 of plant)

1 = Yellowing-green 2 = Olive-green 3 = Medium Green 4 = Dark Green 5 = Grey-green 6 = Other _____

V	3	R1	4	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

LEAF COLOR CHART VALUE: (Royal Horticulture Society Color Chart or Munsell Color Chart)

(Observe fully developed leaves located on middle 1/3 of plant and circle the appropriate color chart)

V	137A	R1	147A	R2	138B	R3		R4	
---	------	----	------	----	------	----	--	----	--

LEAF PUBESCENCE DENSITY:

1 = Absent 2 = Sparse 3 = Medium 4 = Thick 5 = Heavy

V	3	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

LEAF PUBESCENCE LENGTH:

1 = None 2 = Short 3 = Medium 4 = Long 5 = Very Long

V	2	R1	2	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

(Note Descriptor #15 can be used to describe the type and length of the glandular trichomes observed.)

*** LEAF SILHOUETTE:** (See Figure 4)

1 = Closed 3 = Medium 5 = Open

V	5	R1	5	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

PETIOLES ANTHOCYANIN COLORATION:

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very Strong

V	1	R1	1	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

LEAF STIPULES SIZE: (See Figure 5)

1 = Absent 3 = Small 5 = Medium 7 = Large

V	2	R1	4	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

TERMINAL LEAFLET SHAPE (See Figures 6 and 7)

1 = Narrowly ovate 2 = Medium Ovate 3 = Broadly Ovate 4 = Lanceolate 5 = Elliptical 6 = Obovate 7 = Oblong 8 = Other _____

V	3	R1	3	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

5. LEAF CHARACTERISTICS: (continued)

TERMINAL LEAFLET TIP SHAPE: (See Figures 6 and 8)

1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	2	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

* TERMINAL LEAFLET BASE SHAPE: (See Figure 9)

1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	4	R1	4	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

TERMINAL LEAFLET MARGIN WAVINESS:

1 = Absent 2 = Slight 3 = Weak 4 = Medium 5 = Strong

V	2	R1	1	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

NUMBER OF PRIMARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	5.6	R1	5.8	R2	5	R3		R4	
---	-----	----	-----	----	---	----	--	----	--

RANGE:

V	4 to 6	R1	5 to 6	R2	3 to 6	R3	to	R4	to
---	--------	----	--------	----	--------	----	----	----	----

PRIMARY LEAFLET TIP SHAPE: (See Figures 6 and 8)

1 = Acute 2 = Cuspidate 3 = Acuminate 4 = Obtuse 5 = Other _____

V	2	R1	2	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

PRIMARY LEAFLET SIZE:

1 = Very Small 2 = Small 3 = Medium 4 = Large 5 = Very Large

V	2	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

PRIMARY LEAFLET SHAPE: (See Figures 6 and 7)

1 = Narrowly ovate 2 = Medium ovate 3 = Broadly ovate 4 = Lanceolate 5 = Elliptical 6 = Ovate 7 = Oblong 8 = Other _____

V	3	R1	3	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

PRIMARY LEAFLET BASE SHAPE: (See Figures 6 and 9)

1 = Cuneate 2 = Acute 3 = Obtuse 4 = Cordate 5 = Truncate 6 = Lobed 7 = Other _____

V	4	R1	4	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

NUMBER OF SECONDARY AND TERTIARY LEAFLET PAIRS: (See Figure 6)

AVERAGE:

V	7.4	R1	10.9	R2	7.2	R3		R4	
---	-----	----	------	----	-----	----	--	----	--

RANGE:

V	4 to 10	R1	9 to 13	R2	6 to 8	R3	to	R4	to
---	---------	----	---------	----	--------	----	----	----	----

5. LEAF CHARACTERISTICS: (continued)

NUMBER OF INFLORESCENCE/PLANT:

AVERAGE:

V	4,5	R1	3,2	R2	7,3	R3		R4	
---	-----	----	-----	----	-----	----	--	----	--

RANGE:

V	3 to 8	R1	2 to 4	R2	5 to 10	R3	to	R4	to
---	--------	----	--------	----	---------	----	----	----	----

NUMBER OF FLORETS/INFLORESCENCE:

AVERAGE:

V	16,0	R1	12,9	R2	18,6	R3		R4	
---	------	----	------	----	------	----	--	----	--

RANGE:

V	12 to 20	R1	8 to 15	R2	13 to 27	R3	to	R4	to
---	----------	----	---------	----	----------	----	----	----	----

* COROLLA INNER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	76 A	R1	155 C	R2	151 A	R3		R4	
---	------	----	-------	----	-------	----	--	----	--

* COROLLA OUTER SURFACE COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure predominant color of newly open flower and circle the appropriate color chart)

V	76 A	R1	155 C	R2	151 A	R3		R4	
---	------	----	-------	----	-------	----	--	----	--

* COROLLA INNER SURFACE COLOR: (Measure predominant color of newly open flower, if flowers are bi-color please use the ratio codes)

1 = White 2 = Red-violet 3 = Blue-violet 4 = Cream 5 = Red-purple 6 = Blue 7 = Pink 8 = Pink-white 9 = Purple 10 = Violet
 11 = Purple-violet 13 = Violet-White 1:1 14 = Violet-White 1:3 15 = Violet-White 3:1 16 = Violet-White Halo 17 = Pink-White 1:1 18 = Pink-White 1:3 19 = Pink-White 3:1 20 = Pink-White Halo 21 = RedViolet-White 1:1 22 = RedViolet-White 1:3 23 = RedViolet-White 3:1
 24 = RedViolet-White Halo 25 = BlueViolet-White 1:1 26 = BlueViolet-White 1:3 27 = BlueViolet-White 3:1 28 = BlueViolet-White Halo
 12 = Other _____

V	9	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

COROLLA SHAPE: (See Figure 10)

1 = Very rotate 2 = Rotate 3 = Pentagonal 4 = Semi-stellate 5 = Stellate

V	3	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

6. INFLORESCENCE CHARACTERISTICS:

CALYX ANTHOCYANIN COLORATION:

1 = Absent 3 = Weak 5 = Medium 7 = Strong 9 = Very strong

V	2	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

ANTHER COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Measure when newly opened flower is fully expanded and circle the appropriate color chart)

V	14 A	R1	17 B	R2	17 C	R3		R4	
---	------	----	------	----	------	----	--	----	--

ANTHER SHAPE: (See Figure 11)

1 = Broad cone 2 = Narrow cone 3 = Pear-shaped cone 4 = Loose 5 = Other

V	1	R1	1	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

6. INFLORESCENCE CHARACTERISTICS: (continued)

POLLEN PRODUCTION:

1 = None 3 = Some 5 = Abundant

V	4	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

STIGMA SHAPE: (See Figure 12)

1 = Capitate 2 = Clavate 3 = Bi-lobed

V	1	R1	1	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

STIGMA COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	137C	R1	146B	R2	138A	R3		R4	
---	------	----	------	----	------	----	--	----	--

BERRY PRODUCTION: (Under field conditions)

1 = Absent 3 = Low 5 = Moderate 7 = Heavy 9 = Very Heavy

V	1	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

7. TUBER CHARACTERISTICS:

* PREDOMINANT SKIN COLOR:

1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
10 = Purple 11 = Dark purple-black 12 = Other _____

V	5	R1	5	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

PREDOMINANT SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V	164B	R1	164B	R2	164B	R3		R4	
---	------	----	------	----	------	----	--	----	--

SECONDARY SKIN COLOR:

1 = Absent 2 = Present (please describe)

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

SECONDARY SKIN COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color)

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

SECONDARY SKIN COLOR DISTRIBUTION: (See Figure 13)

1 = Eyes 2 = Eyebrows 3 = Splashed 4 = Scattered 5 = Spectacled 6 = Stippled 7 = Other _____

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

SKIN TEXTURE:

1 = Smooth 2 = Rough (flaky) 3 = Netled 4 = Russetted 5 = Heavily russetted 6 = Other _____

V	4	R1	4	R2	4	R3		R4	
---	---	----	---	----	---	----	--	----	--

7. TUBER CHARACTERISTICS: (continued)

* TUBER SHAPE: (See Figure 14)

1 = Compressed 2 = Round 3 = Oval 4 = Oblong 5 = Long 6 = Other _____

V	4	R1	4	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

TUBER THICKNESS:

1 = Round 2 = Medium thick 3 = Slightly flattened 4 = Flattened 5 = Other _____

V	1	R1	1	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

TUBER LENGTH (mm):

AVERAGE:

V	123	R1	130	R2	112	R3		R4	
---	-----	----	-----	----	-----	----	--	----	--

RANGE:

V	89 to 168	R1	95 to 165	R2	81 to 140	R3	to	R4	to
---	-----------	----	-----------	----	-----------	----	----	----	----

STANDARD DEVIATION:

V	19.3	R1	21.4	R2		R3		R4	
---	------	----	------	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN:

V	5 Kg.	R1	5 Kg.	R2	18 Kg.	R3		R4	
---	-------	----	-------	----	--------	----	--	----	--

TUBER WIDTH (mm)

AVERAGE:

V	64	R1	66	R2	62	R3		R4	
---	----	----	----	----	----	----	--	----	--

RANGE:

V	54 to 86	R1	54 to 83	R2	53 to 74	R3	to	R4	to
---	----------	----	----------	----	----------	----	----	----	----

STANDARD DEVIATION:

V	7.1	R1	9.0	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	5000	R1	5000	R2	18000	R3		R4	
---	------	----	------	----	-------	----	--	----	--

7. TUBER CHARACTERISTICS: (continued)

TUBER THICKNESS (mm):

AVERAGE:

V	55	R1	54	R2	53	R3		R4	
---	----	----	----	----	----	----	--	----	--

RANGE:

V	48 to 79	R1	41 to 70	R2	43 to 61	R3	to	R4	to
---	----------	----	----------	----	----------	----	----	----	----

STANDARD DEVIATION:

V	6.4	R1	7.1	R2		R3		R4	
---	-----	----	-----	----	--	----	--	----	--

AVERAGE WEIGHT OF SAMPLE TAKEN (g):

V	5000	R1	5000	R2	18000	R3		R4	
---	------	----	------	----	-------	----	--	----	--

TUBER EYE DEPTH:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	3	R1	3	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

TUBER LATERAL EYES:

1 = Protruding 3 = Shallow 5 = Intermediate 7 = Deep 9 = Very deep

V	3	R1	3	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

NUMBER EYE/TUBER:

AVERAGE:

V	16	R1	17	R2	20	R3		R4	
---	----	----	----	----	----	----	--	----	--

RANGE:

V	11 to 23	R1	14 to 23	R2	16 to 28	R3	to	R4	to
---	----------	----	----------	----	----------	----	----	----	----

DISTRIBUTION OF TUBER EYES:

1 = Predominantly apical 2 = Evenly distributed

V	2	R1	2	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

PROMINENCE OF TUBER EYEBROWS:

1 = Absent 2 = Slight prominence 3 = Medium prominence 4 = Very prominent 5 = Other _____

V	2	R1	2	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

7. TUBER CHARACTERISTICS: (continued)

PREDOMINANT TUBER FLESH COLOR

1 = White 2 = Light Yellow 3 = Yellow 4 = Buff 5 = Tan 6 = Brown 7 = Pink 8 = Red 9 = Purplish-red
 10 = Purple 11 = Dark purple-black 12 = Other _____

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

PRIMARY TUBER FLESH COLOR CHART VALUE: (Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart))

V	155 A	R1	155 A	R2	155 B	R3		R4	
---	-------	----	-------	----	-------	----	--	----	--

SECONDARY TUBER FLESH COLOR:

1 = Absent 2 = Present, please describe: _____

V	1	R1	1	R2	1	R3		R4	
---	---	----	---	----	---	----	--	----	--

SECONDARY TUBER FLESH COLOR CHART VALUE: Royal Horticulture Society Color Chart or Munsell Color Chart (Circle the appropriate color chart)

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

NUMBER OF TUBERS/PLANT:

1 = Low (<8) 2 = Medium (8-15) 3 = High (>15)

V	1	R1	2	R2	2	R3		R4	
---	---	----	---	----	---	----	--	----	--

8. DISEASES CHARACTERISTICS:

DISEASES REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lesions in Number and Size
 4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
 7 = Susceptible 9 = Highly Susceptible

LATE BLIGHT: (Phytophthora)

V	7	R1	9	R2	7	R3		R4	
---	---	----	---	----	---	----	--	----	--

EARLY BLIGHT: (Alternaria)

V	6	R1	7	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

SOFT ROT (Erwinia)

V	6	R1	7	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

COMMON SCAB (Streptomyces)

V	2	R1	3	R2	3	R3		R4	
---	---	----	---	----	---	----	--	----	--

POWDERY SCAB (Spongospora)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

DRY ROT (Fusarium)

V	7	R1	7	R2	7	R3		R4	
---	---	----	---	----	---	----	--	----	--

POTATO LEAF ROLL VIRUS (PLRV)

V	9	R1	9	R2	7	R3		R4	
---	---	----	---	----	---	----	--	----	--

8. DISEASES CHARACTERISTICS: (continued)

POTATO VIRUS X (PVX)

V	0	R1	7	R2	7	R3		R4	
---	---	----	---	----	---	----	--	----	--

POTATO VIRUS Y (PVY)

V	5	R1	3	R2	5	R3		R4	
---	---	----	---	----	---	----	--	----	--

POTATO VIRUS M (PVM)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

POTATO VIRUS A (PVA)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

GOLDEN NEMATODE (Globodera)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

ROOT - KNOT NEMATODE (Meloidogyne)

V	7	R1	7	R2	7	R3		R4	
---	---	----	---	----	---	----	--	----	--

OTHER DISEASE CORKY RINGSPOT

V	5	R1	3	R2	9	R3		R4	
---	---	----	---	----	---	----	--	----	--

PHYSIOLOGICAL DISORDER

1 = Malformed shape
6 = Blackheart2 = Tuber cracking
7 = Internal sprouting3 = Feathering
8 = Other

4 = Hollow heart

5 = Internal necrosis

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

9. PESTS CHARACTERISTICS:

PEST REACTION: 0 = Not Tested 1 = Highly Resistant 2 = Resistant Few Symptoms 3 = Resistance Few Lesions in Number and Size
4 = Moderately Resistance 5 = Intermedia Susceptible 6 = Moderate Susceptible
7 = Susceptible 9 = Highly Susceptible

COLORADO POTATO BEETLE (CPB) (*Leptinotarsa*)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

GREEN PEACH APHID (*Myzus*)

V	0	R1	0	R2	0	R3		R4	
---	---	----	---	----	---	----	--	----	--

OTHER:

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

OTHER:

V		R1		R2		R3		R4	
---	--	----	--	----	--	----	--	----	--

10. GENE TRAITS:INSERTION OF GENES: 1 = YES 2 = NO ☒

IF YES, describe the gene(s) introduced or attach information:

11. QUALITY CHARACTERISTICS:**CHIEF MARKET:**

SPECIFIC GRAVITY (wt. air/wt. air - wt. water)

1 = <1.060 2 = 1.060-1.069 3 = 1.070-1.079 4 = 1.080-1.089 5 = >1.090

V 3

R1 2

R2 4

R3

R4

TOTAL GLYCOALKALOID CONTENT (mg./100 g. fresh tuber)

V 2.0

R1 4.0

R2 6.6

R3

R4

OTHER QUALITY CHARACTERISTICS: Describe any other quality characteristics that may aid in identification, (e.g., chip-processing, french fry processing, baking, boiling, after-cooking darkening). Please attach data and corresponding protocol.**12. CHEMICAL IDENTIFICATION:**

Describe chemical traits of the candidate variety that aid in its identification (e.g., protein or DSN electrophoresis). Please attach data and the corresponding protocol.

13. FINGER PRINTING MARKERS:ISOZYMES 1 = YES 2 = NO ☒

IF YES, attach information

14. DNA PROFILE: 1 = YES 2 = NO ☒

IF YES, attach information

15. ADDITIONAL COMMENTS AND CHARACTERISTICS:

Include any additional descriptors that would be useful in distinguishing the candidate variety.

Exhibit D: Additional Description of the Variety (optional)

1. "Klamath Russet: A Full-Season, Fresh Market, Long Russet"
Mosley, A.R., et al. 2001.
American Journal of Potato Research (2001) 78:377-381
2. Variety Description: "KLAMATH RUSSET (AO85165-1)"
Mosley, A.R., et al. 2001.
<http://oregonstate.edu/potatoes/Klamath.PDF>
3. One-page Variety Profile: "Klamath Russet"
Adapted from the Variety Description
<http://oregonstate.edu/potatoes/KLAMATHProfile.pdf>

Klamath Russet: A Full Season, Fresh Market, Long Russet¹

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ABSTRACT

Klamath Russet, a late-maturing cultivar for fresh market use, was jointly released by the Agricultural Experiment Stations of Oregon, Idaho, and Washington and the U.S. Department of Agriculture in 2000. Klamath Russet was tested in irrigated trials in Oregon from 1990 to 1999 and in Western Regional Trials from 1994 to 1996. Klamath Russet yields of U.S. #1s have exceeded those for Russet Burbank and Russet Norkotah by more than 30%, averaged across all trials. Klamath Russet is moderately resistant to *Verticillium* wilt and highly resistant to common scab. Specific gravity for Klamath Russet has averaged 1.076 across all trials compared with 1.070 and 1.081 for Russet Norkotah and Russet Burbank, respectively. Klamath Russet is not considered suitable for french fry production because of high sugar and low starch contents.

BACKGROUND

Klamath Russet was evaluated as AO85165-1. The clone was selected from a cross made in 1985 between Russet Norkotah (Johansen et al. 1988) and A79172-6 by J.J. Pavsek at the University of Idaho Research Center, Aberdeen, Idaho. The initial selection was made at Powell Butte, Oregon in 1987, followed

by two years of seed increase and preliminary evaluations. From 1990 through 1999, Klamath Russet was included in replicated statewide trials at Powell Butte, Hermiston, Klamath Falls, and Ontario, Oregon. It was included in 1993 Tri-State Trials at one location each in Oregon, Washington, and Idaho. From 1994 through 1996, Klamath Russet was evaluated at 13 locations in seven western states in formal Western Regional Trials. Additional studies have evaluated the response of Klamath Russet to nitrogen fertilizer rates, plant population, and diseases.

The pedigree of Klamath Russet is presented in Figure 1.

DESCRIPTION

Plants: *Growth habit:* Large, erect. *Stems:* No anthocyanin pigmentation, weak wings. *Leaves:* Medium green; medium pubescent; open silhouette; no anthocyanin pigment in leaf midribs and petioles. *Terminal leaflets:* Broadly ovate with cuspidate tip, slightly wavy margins, and cordate base. *Primary leaflets:* Four to six pairs per leaf; narrowly ovate with cuspidate tip, small size, and cordate base. *Secondary leaflets:* Medium frequency. *Tertiary leaflets:* Few in number. Vine maturity is late, similar to or slightly later than Russet Burbank.

Inflorescence: Numerous (16) flowers per plant. *Corolla:* Blue-violet on inner and outer surfaces, pentagonal shape. *Calyx:* Weak anthocyanin pigment. *Anthers:* Yellow-orange; broad cone; abundant pollen. *Stigma:* Capitate; olive-green. No berry production.

Tubers: Skin is tan colored with russeted surface; tuber shape is oblong to long. The length/width/thickness ratio, mea-

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ADDITIONAL KEY WORDS: *Solanum tuberosum*, cultivar, high yield, *Verticillium*.

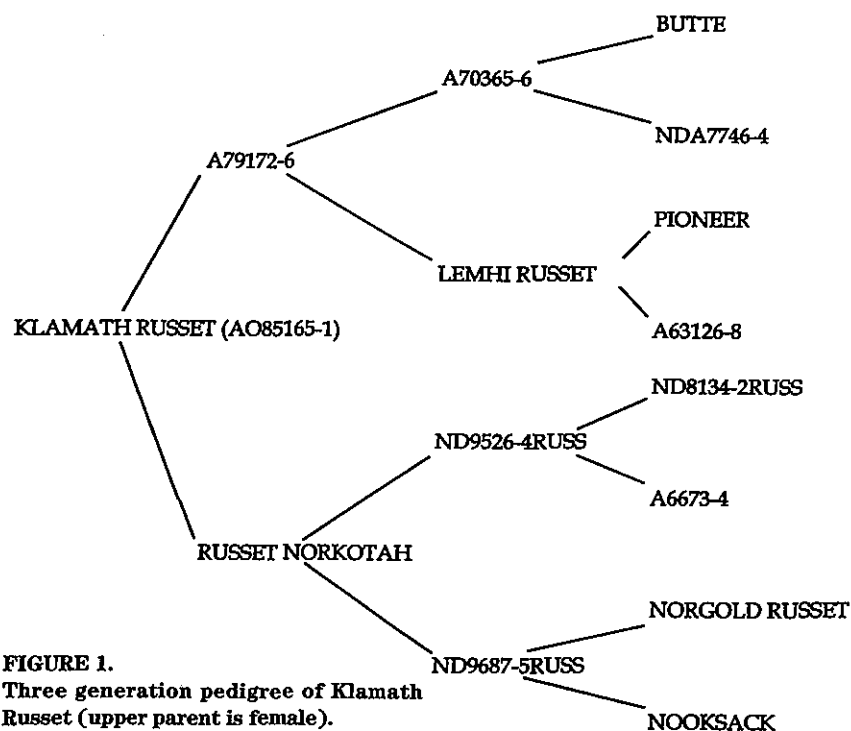


FIGURE 1.
Three generation pedigree of Klamath
Russet (upper parent is female).

set U.S. #1 yields averaged 141% and 136% of yields for Russet Burbank and Russet Norkotah, respectively (Table 1); corresponding specific gravity averaged 1.075, 1.081, and 1.071. Klamath Russet was evaluated in 17 early-harvest and 26 late-harvest Western Regional Trials in 7 states from 1994 to 1996. Averaged over all early-harvest trials, Klamath Russet achieved U.S. #1 yields of 134% of Russet Norkotah and in late trials, 131% of Russet Burbank (Table 2). Mean specific gravities in late-harvest trials were 1.077 and 1.083 for Klamath Russet and Russet Burbank, respectively. Klamath Russet has been consistently darker in fry color than Russet Burbank in all trials and is not considered suitable for french fry processing (data not shown).

RESISTANCE TO DISEASE AND PHYSIOLOGICAL DISORDERS

sured at Klamath Falls, Oregon, is approximately 12.3/6.4/5.5 compared with 11.2/6.2/5.3 for Russet Burbank and 13.0/6.6/5.4 for Russet Norkotah. Eye depth is shallow with about 16 eyes per tuber, fairly well distributed. Eyebrows are slightly prominent. Tuber flesh is white. Dormancy is longer than that of Russet Burbank stored at 7 C. Maturity is similar to Russet Burbank.

CHARACTERISTICS

Klamath Russet consistently produces higher U.S. #1 yields and larger tubers than either Russet Burbank or Russet Norkotah. In 38 Oregon statewide trials over nine years, Klamath Rus-

set compared with Russet Burbank, Klamath Russet is less susceptible to *Verticillium* wilt; equal in susceptibility to potato leafroll virus (PLRV), tuber net necrosis caused by PLRV, foliar infection by late blight caused by *Phytophthora infestans*, and Fusarium dry rot (*Fusarium* spp.); and more susceptible to tuber late blight infection and Erwinia soft rot (*Erwinia* spp.) (Tables 3 and 4). Compared with Russet Norkotah, Klamath Russet is less susceptible to *Verticillium* wilt and early blight caused by *Alternaria solani*. Klamath Russet is moderately susceptible to potato virus Y and expresses foliar symptoms clearly, is susceptible to corky ringspot infection caused by tobacco rattle virus, but shows less severe symptom expression than Russet Burbank, and is susceptible to root-knot nematode (*Meloidog-*

TABLE 1—Performance of Klamath Russet (KR), Russet Burbank (RB), and Russet Norkotah (RN) at four Oregon locations from 1990 to 1999.

Location	Number of years	Total Yield (T/ha)			Mkt. Yield (T/ha)			Specific Gravity		
		KR	RB	RN	KR	RB	RN	KR	RB	RN
Powell Butte	10	44.2	43.5	38.3	33.8	28.9	30.9	1.077	1.084	1.074
Klamath Falls	10	60.9	54.4	47.9	53.5	36.8	41.0	1.078	1.085	1.070
Hermiston	8	82.0	74.9	51.0	70.0	43.2	39.7	1.068	1.075	1.067
Ontario	10	54.2	58.4	47.8	45.7	35.5	38.1	1.078	1.079	1.074
Overall Mean		60.3	57.8	46.3	50.8	36.1	37.4	1.075	1.081	1.071

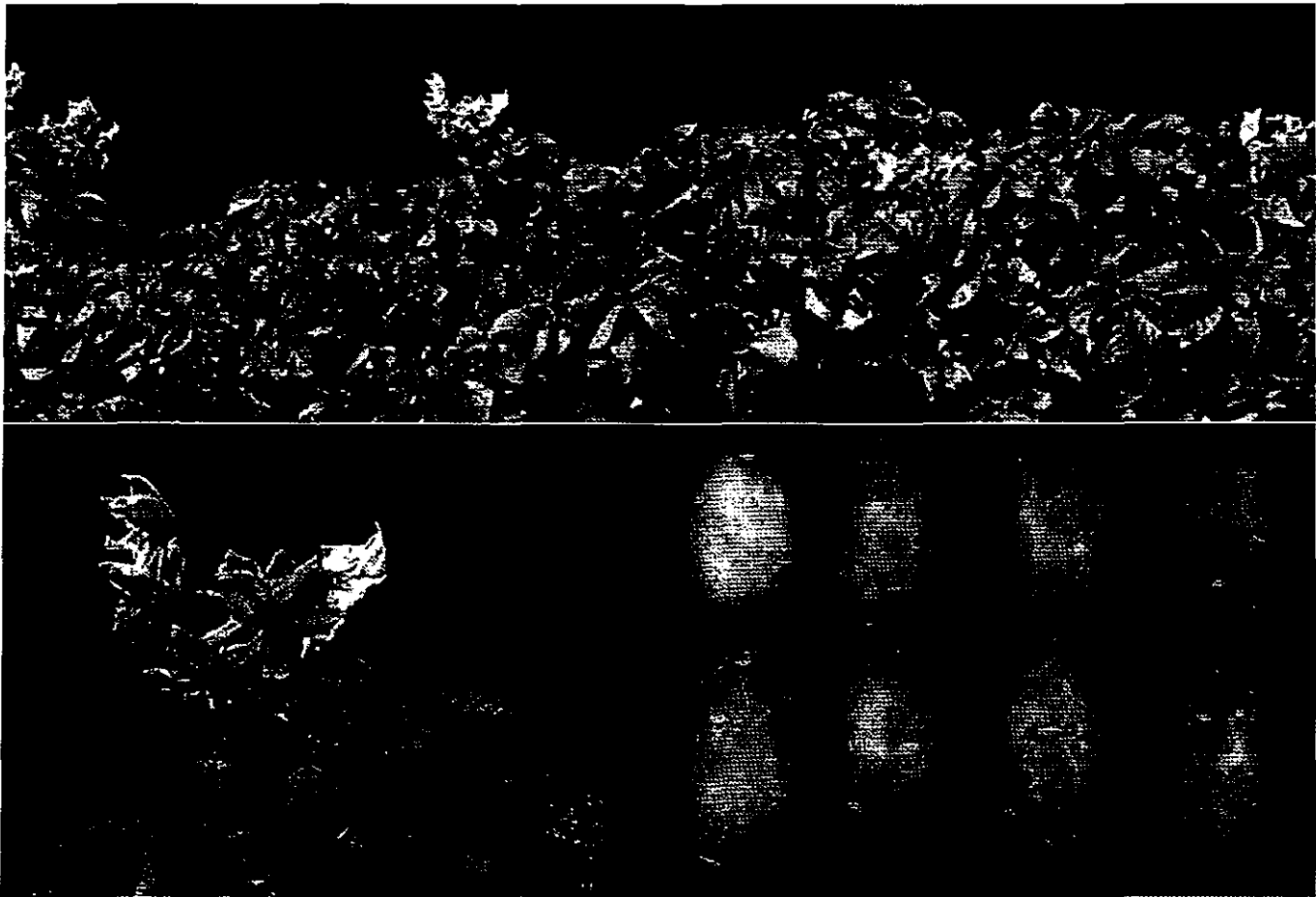


FIGURE 2. Plant, flower, and tuber characteristics of Klamath Russet.

TABLE 2—Performance of Klamath Russet (KR), Russet Burbank (RB), and Russet Norkotah (RN) in Western Regional Trials from 1994 to 1996.

Year	Total Yield (T/ha)			Mkt. Yield (T/ha)			Specific Gravity		
	KR	RB	RN	KR	RB	RN	KR	RB	RN
Early Harvest ¹									
1994	49.3	—	31.5	37.8	—	26.1	1.070	—	1.077
1995	43.6	—	37.8	34.2	—	29.3	1.072	—	1.071
1996	45.0	—	33.8	36.9	—	25.7	1.079	—	1.075
Overall Mean	46.0	—	34.4	36.3	—	27.1	1.074	—	1.074
Late Harvest ²									
1994	73.0	73.8	—	63.6	51.7	—	1.078	1.085	—
1995	64.7	50.6	—	58.4	35.8	—	1.077	1.083	—
1996	61.3	57.0	—	52.0	39.0	—	1.077	1.080	—
Overall Mean	66.3	60.5	—	58.0	42.2	—	1.077	1.083	—

¹Locations: Kern County, CA, Kimberly, ID, Clovis, NM, Hermiston, OR, Springlake, TX, and Othello, WA.

²Locations: Tulelake, CA, Aberdeen, ID, Kimberly, ID, Farmington, NM, Hermiston, OR, Klamath Falls, OR, Ontario, OR, and Othello, WA.

yne chitwoodi). Foliar and tuber symptoms of bacterial ringrot are less clearly expressed by Klamath Russet than by Russet Burbank. Disease susceptibility evaluations presented in Table 3 are based on non-replicated field trials conducted over three years. Response to late blight (Table 4) was determined in a replicated field trial.

In Oregon statewide trials, hollow-heart plus brown-center incidence in tubers was 6.6% for Klamath Russet, 11.5% in Russet Burbank and 3.7% in Russet Norkotah (Table 5). Klamath Russet had less brown center than either standard cultivar, but more vascular discoloration. In Western Regional Trials, Klamath Russet experienced less hollow-heart and brown center than Russet Burbank (Table 6). Hollow-heart has usually been observed only in oversized Klamath Russet tubers (>400 g). Klamath Russet was similar to Russet Burbank in blackspot bruise and shatter bruise in Oregon (Table 5) and Western Regional Trials (Table 6). Growth cracks are seldom observed in Klamath Russet.

In two years of evaluation in Western Regional Trials at

TABLE 3—Average disease reactions for Klamath Russet, Russet Burbank, and Russet Norkotah in Western Regional Trials from 1994 to 1996.

Disease	Klamath Russet	Russet Burbank	Russet Norkotah
Vert. Wilt	MR - R ¹	S - MS	VS
Early blight (foliar)	MS	S - MS	VS
Late blight (foliar)	S	MS - S	VS
Late blight (tubers)	MS - S	MS - R	S
PLRV	VS	S	S
Net necrosis	S	S	MR
PVY (foliar symptoms) ²	C	C	P
Erwinia soft rot	MS - S	MR - S	S
Fusarium dry rot	S	S	S
Common scab	R - VR	R	R

¹S - susceptible; R - resistant; M - moderately; V - very.

²C - symptoms expressed clearly; P - symptoms expressed poorly.

Aberdeen, Idaho, Klamath Russet averaged 2.0 mg/100 g fresh weight of total glycoalkaloids while Russet Burbank averaged 6.6 mg/100 g fresh weight (Table 7). Vitamin C content averaged 18.2 and 17.2 mg/100 g fresh weight for Klamath Russet and Russet Burbank, respectively. Dextrose and sucrose content were higher in Klamath Russet than in Russet Burbank by 205% and 142%, respectively.

USAGE

Klamath Russet will be used primarily for the fresh market. Preliminary culinary evaluations failed to detect after-cooking darkening, sloughing, or off-flavors in Klamath Russet. An attrac-

TABLE 4—Response to late blight at Corvallis, Oregon, in 1998 for Klamath Russet and standard cultivars.

Variety	Foliar Rating ¹	% Tuber Infection ²	Decay Index ³
Klamath Russet	61.2	42.5	4.5
Russet Burbank	71.2	22.5	6.0
Russet Norkotah	92.5	12.5	2.0
LSD (0.05) ⁴	17.8	18.8	4.2

¹Foliar injury rating: 0 = 0%; 50 = 50%; 100 = 100% of leaf surface necrotic.

²Percentage of tubers with late blight infection at harvest.

³Tuber decay severity rating: 0 = no infection; 10 = uncontrollable decay.

⁴LSD's based on a trial including 40 cultivars and experimental lines.

tive appearance, high yields of marketable tubers, and good long-term storability favor acceptance of Klamath Russet. With maturity similar to Russet Burbank, Klamath Russet requires a 120-day growing season to achieve optimum yield and quality. Plant populations should be 25% to 30% higher than for Russet Burbank to avoid excessive size and hollow-heart in large tubers. Reduced nitrogen fertilizer rates are recommended to limit vine growth and hasten maturity. Seed conditioning to promote early emergence may be beneficial, as Klamath Russet requires several more days from planting to emergence than Russet Burbank under similar seed management. Limited seed is available from commercial seed growers and the Oregon Foundation Potato Seed program. Application for plant variety protection has been submitted for Klamath Russet by the Oregon Agricultural Experiment Station.

ACKNOWLEDGMENT

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LITERATURE CITED

Johansen, R.H., B. Farnsworth, D.C. Nelson, G.A. Secor, N. Gudmestad, and P.H. Orr. 1988. Russet Norkotah: A new russet-skinned potato cultivar with wide adaptation. *Am Potato J* 65:597-604.

TABLE 5—Physiological defects in Klamath Russet, Russet Burbank, and Russet Norkotah in 38 Oregon statewide trials, 1990-99.

Variety	Internal Defects ¹				External Defects ²	
	HH/BC	IBS	BS	VD	GC	SB
	%				rating scale ³	
Klamath Russet	6.6	0.2	4.5	7.6	4.6	4.5
Russet Burbank	11.5	3.0	5.0	3.0	4.0	4.3
Russet Norkotah	3.7	0.3	4.7	2.9	4.9	4.7

¹HH/BC = hollow heart + brown center; IBS = internal brown spot; BS = blackspot bruise; VD = vascular discoloration.

²GC = growth cracks; SB = shatter bruise.

³Scale: 1 = severe; 5 = none.

TABLE 6—*Physiological defects in Klamath Russet and Russet Burbank in Western Regional Trials, 1994-96.*¹

Entry	Year	Internal Defects ²			External Defects ³		
		HH & BC	IBS	BS	K	GC	SB
		— % —		— Scale ⁴ —		— Scale ⁵ —	
Klamath R.	1994	3.0	0.0	1.9	4.8	4.8	4.5
	1995	4.0	0.3	3.8	4.7	4.8	4.4
	1996	6.0	0.7	3.8	5.0	4.6	4.5
	Avg.	4.3	0.3	3.2	4.8	4.7	4.5
R. Burbank	1994	7.0	4.0	2.5	3.5	3.9	4.6
	1995	7.0	1.3	3.6	4.1	4.6	4.3
	1996	16.0	2.1	3.8	3.4	3.7	4.7
	Avg.	10.0	2.5	3.3	3.7	4.1	4.5

¹Locations: California, Colorado, Idaho, New Mexico, Oregon, Texas, Washington.

²HH = hollow heart; BC = brown center; IBS = internal brown spot; BS = blackspot bruise.

³K = knobiness; GC = growth cracks; SB = shatter bruise.

⁴Scale: 1 = poor, 5 = best.

⁵Scale: 1 = severe, 5 = none.

TABLE 7—*Relative tuber composition of Klamath Russet and Russet Burbank in Western Regional Trials at Aberdeen, ID, in 1995-1996.*

Entry	% Oven Dried Solids	% Fresh Wt. Basis			Mg/100g Fresh Wt. Basis	
		Dex-trose	Sucrose	Protein	Vitamin C	Total Glycoalkoids
Klamath Russet	20.9	0.20	0.24	4.7	18.2	2.0
Russet Burbank	21.2	0.10	0.17	4.7	17.2	6.6

KLAMATH RUSSET (AO85165-1)

A. Mosley, D. Hane, S. James, K. Rykbost, C. Shock, J. Pavek, D. Corsini, B. Charlton, F. Boullester, E. Eldredge, and S. Yilma



Oregon released Klamath Russet (AO85165-1) in the spring of 2000 in cooperation with the Idaho, and Washington Agricultural Experiment Stations and the United States Department of Agriculture. Klamath Russet is a late-maturing, high-yielding, blocky, russet-skinned variety suitable for fresh market. Sugars are typically too high and solids too low for satisfactory frozen processing.

Klamath Russet was selected in 1987 at Powell Butte, Oregon from a cross between Russet Norkotah and A79172-6 (Figure 1) performed by Dr. J.J. Pavek, USDA-ARS, Aberdeen, Idaho in 1985. Klamath was extensively tested in Oregon Statewide variety trials at four locations from 1990 to 1998, in Tri-state trials at three locations in 1993, and in Western Regional trials at 13 locations in seven western states from 1994 to 1996. Seed was initially multiplied at the Central Oregon Agricultural Research Center at Powell Butte.

Klamath Russet consistently produces higher total yields and much higher No.1 yields and larger tubers than either Russet Burbank or Russet Norkotah (Tables 1, 4, 6). Klamath Russet has higher solids than Russet Norkotah (Table 1) but lower than Russet Burbank (Tables 1, 4, 6). Hollow heart and brown center are less common in Klamath Russet than in Russet Burbank, but hollow heart is often present in oversized tubers. Klamath Russet is

susceptible to growth cracking. Blackspot bruising and vascular discoloration are slightly more common in Klamath Russet than in Russet Burbank and Russet Norkotah (Tables 2, 5, 7).

Klamath Russet tubers are darker colored, more heavily russetted, and more uniform in shape and size than Russet Burbank and nearly as uniform and attractive as Russet Norkotah in short-season western sites (Table 3); tubers are blocky with slightly lower length/width ratios than either of the other two varieties (Table 3). Klamath Russet should be planted closer than Russet Burbank to avoid excessive tuber size and increased risk of hollow heart.

Compared to Russet Burbank, Klamath Russet tubers are higher in dextrose and sucrose content, similar in protein and vitamin C, and lower in total glycoalkaloids (Table 10). Klamath Russet is not considered suitable for French fry processing because of high sugar and low starch content. Preliminary culinary evaluations of Klamath Russet at Klamath Falls, Oregon failed to detect after-cooking darkening, off-flavor, or sloughing problems.

Klamath Russet vines mature slightly later than Russet Burbank (Tables 3, 8). It is moderately resistant to verticillium wilt and very resistant to common scab. It is very susceptible to potato leafroll virus (PLRV); susceptible to net necrosis caused by PLRV, foliar and tuber

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infection by late blight, and *Fusarium* dry rot; and moderately susceptible to early blight and *Erwinia* soft rot (Table 9). Klamath Russet is susceptible to corky ringspot caused by tobacco rattle virus.

Certified seed of Klamath Russet is available from seed growers in Oregon. Limited quantities of *invitro* and greenhouse stocks can be ordered from the Foundation Potato Seed Program (Phone 541-737-5838) at Oregon State University.

Table 1. Yield and quality characteristics of AO85165-1, R. Burbank, and R. Norkotah in Oregon Statewide Trials, 1990-1998¹.

Entry	Yield (cwt/acre)						% US No. 1	Oz/ Tuber	Spec. Grav.
	Total	US No. 1		Total	<4 oz	No. 2's & Culls			
		4-12 oz	>12 oz						
AO85165-1	537	273	183	456	43	38	83	7.9	1.076
R. Burbank	512	272	55	327	82	99	64	6.4	1.081
R. Norkotah	404	257	73	329	53	21	81	6.6	1.070

¹ Locations: Hermiston, Powell Butte, Klamath Falls, Ontario (34 location years)

Table 2. Physiological defects of AO85165-1, R. Burbank, and R. Norkotah in Oregon Statewide Trials, 1990-1998¹.

Entry	Internal Defects ²					External Defects ³	
	HH	BC	BS	VD	IBS	GC	SB
			----- % -----			Rating Scale ⁴	
AO85165-1	5.8	0.1	2.6	7.3	0.3	4.7	4.6
R. Burbank	5.8	8.3	1.6	5.3	1.5	4.0	4.8
R. Norkotah	2.5	1.4	1.1	2.5	0.1	4.9	4.8

¹ Locations: Hermiston, Powell Butte, Klamath Falls, Ontario (34 location years)² HH = Hollow Heart; BC = Brown Center; BS = Blackspot Bruise; VD = Vascular Discoloration; IBS = Internal Brown Spot³ GC = Growth Cracks; SB = Shatter Bruise⁴ Scale: 1 = Severe; 5 = None**Table 3. Morphological characteristics of AO85165-1, R. Burbank, and R. Norkotah in Oregon Statewide Trials, 1990-1997¹.**

Entry	Vine Size ²	Vine Mat. ³	Tuber Shape ⁴	Degree Russ. ⁵	Skin Color ⁶	Eye Depth ⁷	Size Unif. ⁸	Shape Unif. ⁹	L/W Ratio ¹⁰
AO85165-1	2.3	3.3	4.0	3.7	4.1	3.5	3.5	3.8	1.66
R. Burbank	2.5	2.9	4.5	3.6	4.0	3.5	3.1	3.1	1.87
R. Norkotah	3.4	2.5	4.4	4.1	4.4	3.8	3.8	4.2	1.74

¹ Locations: Hermiston, Powell Butte, Klamath Falls, Ontario (34 location years)² Vine Size: 1 = Large; 5 = Small³ Vine Maturity: 1 = Early; 5 = Late⁴ Tuber Shape: 1 = Round; 5 = Long, Narrow⁵ Russetting: 1 = Light; 5 = Heavy⁶ Skin Color: 2 = White; 3 = Buff; 4 = Brown; 5 = Dk. Brown⁷ Eye Depth: 1 = Deep; 2 = Shallow⁸ Size Uniformity: 1 = Poor; 3 = Fair; 5 = Excellent⁹ Shape Uniformity: 1 = Poor; 3 = Fair; 5 = Excellent¹⁰ Length to Width Ratio: 1 = Round; 2 = Long, Skinny

Table 4. Yield and quality characteristics of AO85165-1, and R. Burbank in Tri-State Trials, 1993¹.

Entry	Loc.	Yield (cwt/acre)						%	Oz/ Tuber	Spec. Grav.
		Total	US No. 1			<4 oz	No. 2's & Culls			
			4-12 oz	>12 oz	Total			US No. 1		
AO85165-1	ID	594	356	181	537	34	22	90	8.5	1.077
	OR	1008	344	613	957	19	31	95	11.9	1.070
	WA	806	407	263	670	43	93	83	8.5	1.078
	Avg	803	369	352	721	32	49	89	9.6	1.075
R. Burbank	ID	493	296	7	303	155	35	61	4.4	1.084
	OR	765	443	266	709	28	28	93	9.3	1.083
	WA	720	420	98	518	89	114	72	6.3	1.090
	Avg	659	386	124	510	91	59	75	6.7	1.086

¹ Locations: Aberdeen, ID; Hermiston, OR; Othello, WATable 5. Physiological defects of AO85165-1, and R. Burbank in Tri-State Trials, 1993¹.

Entry	Loc.	Internal Defects ²			
		HH	BC	BS	IBS
		%			
AO85165-1	ID	0.0	0.0	2.6	0.0
	OR	0.0	0.0	3.0	0.0
	WA	0.0	0.0	4.3	0.0
	Avg	0.0	0.0	3.3	0.0
R. Burbank	ID	28.0	13.0	2.6	0.0
	OR	9.0	14.0	2.0	0.0
	WA	15.0	15.0	4.3	0.0
	Avg	17.0	14.0	3.0	0.0

¹ Locations: Aberdeen, ID; Hermiston, OR; Othello, WA² HH = Hollow Heart; BC = Brown Center; BS = Blackspot Bruise; IBS = Internal Brown Spot

Table 6. Average yield and quality characteristics of AO85165-1 and Russet Burbank in Western Regional Trials, 1994-1996¹.

Entry	Year	Yield (cwt/acre)						% US No. 1	Oz/ Tuber	Spec. Grav.
		Total	US No. 1		Total	No. 2's & Culls	<4 oz			
			4-12 oz	>12 oz						
AO85165-1	1994	681	307	287	594	47	40	86	7.4	1.076
	1995	592	275	245	520	32	39	88	7.3	1.076
	1996	548	270	190	460	43	45	84	7.7	1.076
	Avg	607	284	241	525	41	41	86	7.5	1.076
R. Burbank	1994	688	330	115	445	176	67	66	6.9	1.082
	1995	475	258	58	316	47	113	66	5.1	1.080
	1996	520	257	91	348	96	76	67	5.7	1.081
	Avg	561	282	88	370	106	85	66	5.9	1.081

¹ Locations: California, Colorado, Idaho, New Mexico, Oregon, Texas, WashingtonTable 7. Physiological defects of AO85165-1 and Russet Burbank in Western Regional Trials, 1994 - 1996¹.

Entry	Year	Internal Defects ²			External Defects ³		
		HH & BC	IBS	BS	K	GC	SB
		----- % -----		-- Scale ⁴ --		----- Scale ⁵ -----	
AO85165-1	1994	3.0	0.0	1.9	4.8	4.8	4.5
	1995	4.0	0.3	3.8	4.7	4.8	4.4
	1996	6.0	0.7	3.8	5.0	4.6	4.5
	Avg.	4.3	0.3	3.2	4.8	4.7	4.5
R. Burbank	1994	7.0	4.0	2.5	3.5	3.9	4.6
	1995	7.0	1.3	3.6	4.1	4.6	4.3
	1996	16.0	2.1	3.8	3.4	3.7	4.7
	Avg.	10.0	2.5	3.3	3.7	4.1	4.5

¹ Locations: California, Colorado, Idaho, New Mexico, Oregon, Texas, Washington² HH = Hollow Heart; BC = Brown Center; IBS = Internal Brown Spot; BS = Blackspot Bruise³ K = Knobbiness; GC = Growth Cracks; SB = Shatter Bruise⁴ Scale: 1 = poor, 5 = best⁵ Scale: 1 = severe, 5 = none

Table 8. Morphological characteristics of AO85165-1 and Russet Burbank in Western Regional Trials, 1994 - 1996¹.

Entry	Year	Vine Size ²	Vine Mat. ³	Stems/Hill	Tuber Shape ⁴	Degree Russ. ⁵	Eye Depth ⁶
AO85165-1	1994	4.1	3.9	2.2	3.9	3.6	3.2
	1995	3.8	4.1	2.2	4.0	3.7	3.5
	1996	4.1	3.4	1.8	3.3	3.6	3.4
	Avg.	4.0	3.8	2.1	3.7	3.6	3.4
R. Burbank	1994	4.3	3.5	2.2	4.3	3.2	2.6
	1995	4.1	3.2	2.9	4.3	3.5	3.2
	1996	4.1	2.8	2.7	4.1	3.6	3.6
	Avg.	4.2	3.2	2.6	4.2	3.4	3.1

¹ Locations: California, Colorado, Idaho, New Mexico, Oregon, Texas, Washington² Vine Size: 1.0 = small, 5.0 = large³ Vine Maturity: 1.0 = early, 5.0 = late⁴ Tuber Shape: 1.0 = round, 5.0 = long, narrow⁵ Russetting: 1.0 = light, 5.0 heavy⁶ Eye Depth: 1.0 = deep, 5.0 shallow

Table 9. Disease reactions for AO85165-1 and Russet Burbank in Western Regional Trials, 1994 - 1996.

Entry	Year	Vert. Wilt	Early Blight	Late Blight		Common Scab	PLRV Foliar	Net Necrosis	Erwinia Soft Rot	Fusarium Dry Rot
				Foliar	Tuber					
AO85165-1	1994	R	MS	—	—	R	VS	S	MS	—
	1995	R	MS	S	MS	VR	VS	S	MS	S
	1996	MR	MS	S	S	VR	VS	S	S	S
R. Burbank	1994	S	S	MS-S	MS	R	VS	S	MR	—
	1995	MS	S	S	R	R	VS	S	MR	S
	1996	S	MS	S	R	R	VS	S	S	S

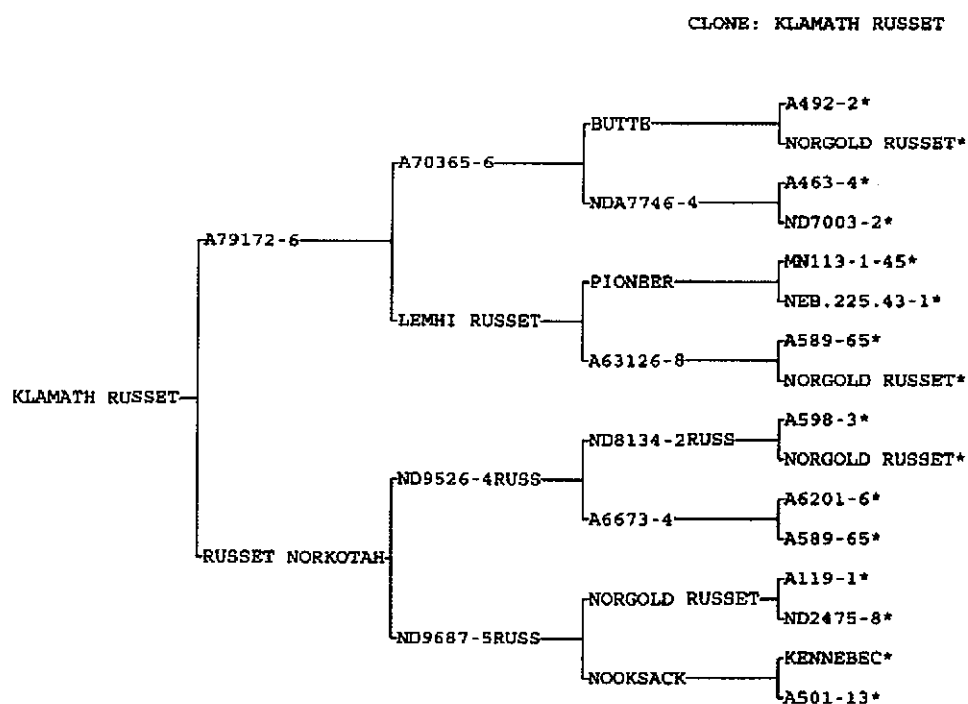
Field rating made at Aberdeen, ID by Dennis Corsini; Hermiston, OR by Dan Hane; Mt. Vernon, WA by Debbie Inglis

Table 10. Relative tuber composition of AO85165-1 and Russet Burbank at Aberdeen, ID¹.

Entry	% Oven Dried Solids	% DWB			Mg/100g FWB	
		Dextrose	Sucrose	Protein	Vitamin C	Total Glycoalkaloids
AO85165-1	20.9	0.195	0.235	4.700	18.150	2.000
R. Burbank	21.2	0.095	0.165	4.650	17.900	6.550

¹ Date 1995 - 1996; courtesy Dr. Dennis Corsini, ARS/USDA

Figure 1. Klamath Russet pedigree.



KLAMATH RUSSET

#200100094

Klamath Russet, tested as AO85165-1, was selected in 1987 at Powell Butte, Oregon from a cross between R. Norkotah and A79172-6 performed by Dr. J.J. Pavak, USDA-ARS, Aberdeen, Idaho in 1985.

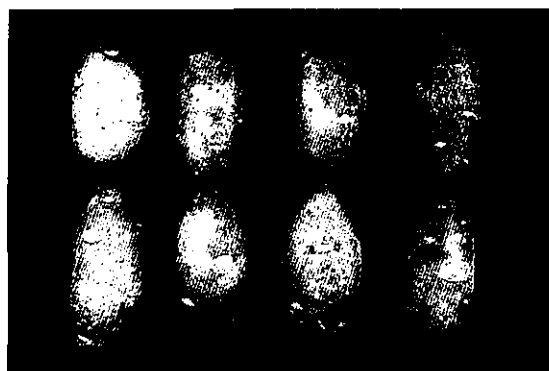
Developers: Oregon, Idaho, and Washington Agricultural Experiment Stations and the USDA-ARS.

Klamath Russet consistently produces higher total yields and much higher yields of U.S. No. 1's than either Russet Burbank or Russet Norkotah. Klamath Russet is suitable for fresh market use only. High reducing sugars and low starch content prohibit use for processing.

Strengths: very high yields, few external defects, excellent dormancy and storability, attractive appearance, strong vine.

Weaknesses: susceptible to blackspot bruise and vascular discoloration, high sugar content, hollow heart in excessively large tubers.

Incentives for Production: very high yields, excellent pack-out, long dormancy.



Compared to Russet Norkotah

Yield	+
Grade	+
Specific Gravity	++
Storability	++
External Defects	0
Internal Defects	-
Metribuzin Sensitivity	0

+ = better, 0 = same, - = worse

Agronomic Characteristics

Maturity	Late
Tubers	Oblong-long, blocky
Yield	Very high (+500 cwt./acre)
Specific Gravity	Low to Medium (1.075)
Culinary Quality	Excellent
Foliage	Large, erect vine
Diseases	R to common scab. MR to verticillium wilt. MS to early blight and erwinia soft rot. S to PLRV and associated net necrosis, foliar and tuber late blight, fusarium dry rot and corky ring spot.
Storability	Excellent dormancy and storability with less pressure bruise than standard varieties

R = resistant, **MR** = moderately resistant, **MS** = moderately susceptible, **S** = susceptible

	Total Yield	Yield U.S. No. 1's 4-12 oz	>12 oz	Total	Yield B's	Yield 2's & Culls	% No. 1's	Specific Gravity
Idaho¹								
Klamath Russet	530	298	156	454	49	27	86	1.078
Russet Burbank	456	232	65	297	83	76	64	1.081
Oregon²								
Klamath Russet	527	267	177	444	43	40	82	1.075
Russet Burbank	505	265	54	319	82	104	63	1.081
Russet Norkotah	410	256	77	333	52	25	81	1.071
Washington³								
Klamath Russet	674	240	292	532	38	104	79	1.066
Russet Burbank	579	235	103	338	48	193	59	1.077

¹ 6 trials grown in Idaho, 1994-1996, at Aberdeen and Kimberly

² 38 trials grown in Oregon, 1990-1999, at Hermiston, Klamath Falls, Ontario, Powell Butte

³ 3 trials grown in Washington, 1994-1996, at Othello

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

**EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) State of Oregon by/through STBHE acting on behalf of Oregon State University <i>per correspondence Small, 2007 LAC July 16, 2007</i>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER: AO85165-1	3. VARIETY NAME: Klamath Russet
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Office of Technology Transfer Oregon State University 312 Kerr Administration Building Corvallis, OR 97331	5. TELEPHONE (Include area code) 541-737-0674	6. FAX (Include area code) 541-737-3093
7. PVPO NUMBER <div style="font-size: 2em; font-weight: bold;">#200100094</div>		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

The STATE OF OREGON, Acting by and Through the State Board of Higher Education on behalf of OREGON STATE UNIVERSITY is a partner in the Northwest (Tri-State) Potato Variety Development Program and a signatory of the General Agreement on Policy and Procedure for Release of New Publicly Developed Plant Varieties in Idaho, Oregon and Washington, between Washington State University, Oregon State University, University of Idaho and the United States of America, as represented by the Secretary of Agriculture. In accordance with provision 2.2 of this Agreement, Oregon State University is applying for this PVPC.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

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**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**EXHIBIT F
DECLARATION REGARDING DEPOSIT**

NAME OF OWNER (S) State of Oregon by/through STBHE acting on behalf of Oregon State University per correspondence June 11, 2007 LME 7-16-07	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Office of Technology Transfer Oregon State University 312 Kerr Administration Building Corvallis, OR 97331 United State of America	TEMPORARY OR EXPERIMENTAL DESIGNATION AO85165-1 VARIETY NAME Klamath Russet
NAME OF OWNER REPRESENTATIVE (S) Office of Technology Transfer c/o Sarah Mabae Oregon State University A312 Kerr Administration Bldg Corvallis, OR 97331-2140 USA	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 20 Box 5997 Portland, OR 97228 United States of America	FOR OFFICIAL USE ONLY PVPO NUMBER #200100094

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

B. W. Wall
Signature

2/22/2007
Date